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ABSTRACT

Appalachia has a long history of isolation, poverty and exploitation by outsiders, but many of the region's problems may be wholly or partly solvable through improved communications in such areas as health services, education, and training. The existing facilities for cable television in the area, its potential for use in the needed public services, and recommendations for better use of existing services and additional services to meet the public service programing needs of the area through cable television are reviewed in this report. (Author/RH)

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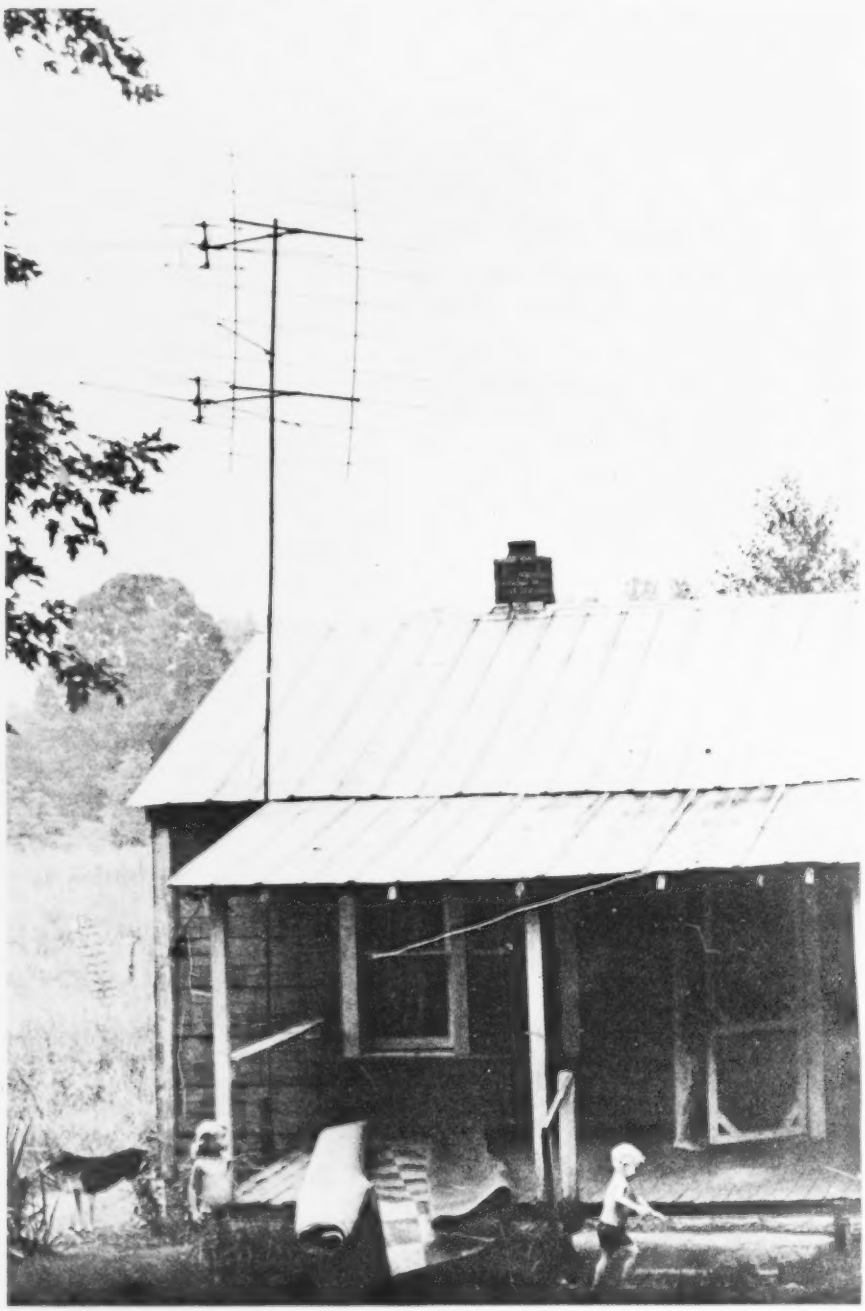

Appalachian Adult Education Center

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Cable Television in Central Appalachia: A Feasibility Study

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The Appalachian Adult Education Center (AAEC) is a multi-purpose research and demonstration agency dedicated to the improvement of the quality of adult basic education throughout the thirteen state Appalachian region.

Toward that end, the Center conducts research on the nature of the adult learner, administers demonstrations of exemplary adult learning programs, trains teachers and administrators in modern methods and techniques of adult instruction, and fosters the development and spread of preferred adult education practices particularly suited to the needs of rural undereducated adults.

PREFACE

The ills that plague Appalachia have been too well publicized to merit their full repetition here. It will suffice to say that the region has a long history of isolation, poverty, and exploitation by outsiders. Many of the region's problems, however, may be looked upon, in part or in whole, as problems of communications. Among these might be counted problems in the delivery of health services, problems of inadequate educational programs, and problems of unemployment.

Appalachia has, however, a new resource to help in redressing its problems, that is as yet virtually untapped. That resource is cable television; until recently the same instrument that did little more than link rural Appalachia with urban-based television broadcast stations. The carriage of more and better broadcast signals is the backbone of cable television's success, and surely the basis of its growth--but if this were all it could promise, this study would never have begun and the national excitement concerning cable communications would never have been generated.

Among the most basic of cable television's new generation of services is local program origination. Through locally cablecast programs it would be possible to alert people of community problems in health, housing, and unemployment; to suggest ways of taking advantage of education, employment, and training opportunities; and to build community support for efforts to solve local and regional social problems. In other words, cable television has the potential to become a powerful communications medium in and of itself.

It was this realization, and its implications for delivery of adult education services, that sparked the Appalachian Adult Education Center, under a grant from the Appalachian Regional Commission, to begin studying the feasibility of involving cable television systems in central Appalachia in efforts toward community and regional development. The specific objectives of the study were to:

1. examine existing CATV facilities within the study area;

2. assess the potential of such facilities for use in public service programming which would be designed to facilitate regional development efforts;

3. recommend ways to make better use of existing facilities and services for public service purposes;

4. recommend additional facilities and services which should be provided to reach and meet the public service programming needs of the area through use of cable television.

Although the research is now completed and our findings now reported, the task is far from over; for the next several years are destined to be formative ones for the future of cable communications.

If cable will develop into a medium which is responsive to community problems is yet unknown. As the Sloan Commission has stated, however, "Choice is still possible in regard to cable television. Citizens may still take a hand in shaping cable television's growth and institutions in a fashion that will bend it to society's will and society's best intentions."

There is, in short, still time. Time for innovation and exploration of alternatives. Time to be used in employing cable television for the improvement of the Appalachian region, and most importantly, time to help shape a technology that, in time, will shape us.

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Cable television is pervasive throughout central Appalachia. As near as can be determined, there are 105 cable television systems operating within the area, serving 136 different communities. These systems range from those with less than 100 subscribers to a giant complex in the Kingsport, Tennessee-Johnson City, Tennessee-Bristol, Virginia (Tri-Cities) area with almost 34,000.

Cable came early to the mountains, especially in Kentucky, where several systems date back to the early 1950's. This early entry into the cable business, although prompted by need, has proved to be a mixed blessing. Good in that it brought television early to an isolated area that otherwise would have had no television service, bad in that the technical advancements of the industry haveleft many of the pioneers behind. Home-made and out of date equipment is still in service in many of the early systems, resulting in poorly served, and underserviced subscribers.

Most area systems are small, averaging about 1,300 subscribers per system. These small systems generally provide far less channel capacity than the state of the art now permits and, with few exceptions, each system is self-contained, independent and unlinked to any other. As is true nationally, cable systems within the study area are to be found primarily in small cities and towns, unserved or only partially served by conventional television. The two large cities in the area, Knoxville and Chattanooga, and the two peripheral cities, Lexington and Roanoke, are all, as yet, without cable service.

Penetration

The mountainous terrain of central Appalachia makes cable television almost essential if one is to receive adequate television service. Local businessmen in even the smallest mountain communities have taken advantage of this fact by literally stringing cable on trees in some cases, and running minimal, but profitable, cable television systems out of the backs of their appliance stores.

The extreme isolation and small size of many cable systems within the area make gathering overall statistics on penetration of cable television a very difficult task. Although required to report to the FCC about certain operational and ownership information, many small systems have simply not complied. Complete statistics were gathered, however, on a sample of 59 of the 105 cable systems operating within the study area.

Central Appalachian cable systems maintain an average penetration of 55 per cent. This figure compares favorably with a national estimate that the average cable TV system has a 56 per cent saturation in its market. Of the three states, Kentucky has the highest level of market penetration with an average of 62.5 per cent. Cable systems in Virginia hold 59.3 per cent of their markets, followed by Tennessee with 46.5 per cent.

Although Kentucky maintains the highest market saturation, it also has the lowest absolute number of subscribers. This is explained by the quantity of cable television systems in eastern Kentucky who are very small, but who maintain a very high proportion of subscribers. There seems to be a direct relationship between the number of subscribers and the average market saturation. For example, tri-state systems that have between 0 and 500 subscribers have an average market saturation of 78 per cent. Those between 501-1500 have an average penetration of 61 per cent. Cable systems with 1,501-3,500 have an average market saturation of 57 per cent, while those between 3,501-7,000 have 55 per cent, and those with 7,001 and above maintain 46 per cent penetration.

The important fact to come from these statistics is that a majority (55 per cent) of the population is "on the cable" in those communities in central Appalachia served by cable television. In other words, although cable does not reach everyone in central Appalachia, it does reach a significant enough number of people to make it worthwhile to use cable as a communication tool.

Channel Capacity

Prerequisite to the provision of local program

origination services, or any number of other non-broadcast services, is the availability of channel space. It is, of course, cable's capability to provide such channel space that makes these services conceivable in the first place. Although carriage of conventional television is the major priority of cable operators and subscribers alike, it is unlikely that twenty, or even more unlikely, forty channels, will be filled with conventional television. Those surplus channels provide the real promise of cable television.

The number of television channels that a coaxial cable can carry is determined by the size of the cable and the sophistication of the associated electronic gear. Early systems were capable of providing six channels; later twelve channels became standard and now twenty channel systems are becoming common. Quite a number of four, five and six channel cable systems are still operating within central Appalachia. Most of these systems with restricted channel capacity have no surplus channels; therefore, before any local origination may take place in those locations the system must be substantially rebuilt.

Non-broadcast Channels

The non-broadcast channel access requirements are the most significant feature of the FCC's new rule package that went into effect in March, 1972. Free access to the public, access on a paid basis on the lease channels, as well as free government and education channels, all provide opportunities for the effective use of CATV to assist in solving regional problems. However, it must be noted that the potential impact of these regulations upon CATV systems in Appalachia is minimized by the fact that much of the population is outside of top 100 markets.

If the courts eventually allow the mandatory program origination ruling to take effect, the requirements of that section would apply to systems below the top 100 markets which have 3,500 or more subscribers. Although the final form of cablecasting regulations is not now predictable, many systems have begun origination of programming either as a public service or in anticipation of this requirement. Even without mandatory origination, it may be expected that CATV operators who are anxious to program new material and attract subscribers will be interested in cooperating with development districts, community organizations, or other service agencies by donating cable time in exchange for programming.

Program Origination

Within central Appalachia, very few cable systems have over 3,500 subscribers. Therefore, the FCC program origination ruling, even if it had not been struck down by the courts, would have had little impact. Likewise, the provisions of the FCC's "Non-Broadcast Channel Access" requirement will not widely apply in central Appalachia because the FCC has made those regulations applicable only to top 100 markets.

For a variety of reasons, however, some few cable systems within the area are voluntarily originating programs and others are making their first tentative steps into cablecasting. Of the forty-seven systems located within the six development districts under study, fourteen systems are currently engaged in some form of non-automatic local origination.

This new emphasis on program origination is one with which many cable operators are ill prepared to cope. It is, nevertheless, the great untapped resource of cable television. Program origination could include instructional programming for home and classroom; televising of local activities, such as school board or city council meetings, community drama, civic events, or local sports; and informational and educational programming useful especially to low-income groups.

The precise coverage of a cable TV system makes it the logical medium for solving the problems of local television service, and the economics of CATV also make community television possible at a drastically reduced cost.

There are several alternatives related to just exactly who in the community should be responsible for local CATV system origination. Local origination by the CATV system operator is one such alternative.

> *However, to leave this function entirely in the hands of the operator would place him in competition with all other suppliers of programming who may wish to distribute their product over the CATV system. This competitive relationship may not be desirable in the long run, since the operator, seeking to maximize the value of his programming, might restrict access and therefore limit diversity.*[1]

The example of local origination in Canada also is helpful in showing the limitations of program origination under operator sponsorship.

> *After as much as ten years of local origination, operators of large Canadian CATV systems tend to settle for a modest level of effort with limited experimentation . . . .The primary function becomes public relations--maintaining favor with regulatory agencies, the government, and the public--and the secondary function attracting new subscribers. All of these factors militate against direct community involvement and against providing an outlet for the nonconformist and the unpopular point of view.*[2]

An alternative to operator sponsored origination is placing responsibility for local origination in the hands of a broad-based community association, a citizen's communications council. Local development districts might well become the parent organization of such community councils, or at least aid in their formation. When such councils are established, they may procure their own equipment and studio space, and operate independently or they may prefer a cooperative arrangement with the cable operator.

Summary

An overview of cable television as it now exists in central Appalachia may not appear overly impressive. Most systems are small, averaging 1,300 subscribers per system. They have an average channel capacity of ten channels, but actually deliver an average of seven broadcast signals.

Each system is independent and unlinked to any other. Rather than an "electronic highway" they more closely resemble a city street system, with the cable dead-ending at the city limits. Only a handful of cable operators are involved in local origination. Most systems are totally dependent upon the products of broadcast television.

Even with these limitations, area cable systems reach roughly 18 per cent of the potential audience, some 480,000 people. This figure might not seem impressive except when compared with the 9 per cent audience figure that cable has nationally. These figures reveal little however, for they compare cable television in broadcast

terminology. They measure with equality where cable is and where it isn't. If compared on its own terms, by looking at the audience size in communities penetrated by cable, it is obvious that cable can hold its own for it enjoys an average of 55 per cent penetration.

Cable television in central Appalachia, if viewed as a macrosystem, is discouraging. If viewed as an electronic highway, a means of facilitating the exchange of information and ideas between connected points, it is a disappointing failure. This is not to say that interconnection will not, in time, occur. Satellite experts speak of low cost interconnection that will merge independent cable systems into a national network, or any number of regional configurations.

As cable is presently constituted, however, there is no overall "cable television system," if we think of "system" in its dictionary definition. Unlike macro-systems such as the broadcast television system or telephone system, cable television "micro-systems" are not interdependent, nor do they regularly interact with one another. They are independent entities that, as yet, provide only a purely local service, with no connection or importance to even nearby communities.

Within a given community, cable television does function as a system for it interconnects many homes through its "head-end." If we focus then upon the individual micro-system, or even upon multiples of individual micro-systems, it becomes clear that the outlook is not nearly so bleak, for the community, as defined by the limits of the cable system, is the natural and primary place for the development of expanded cable services to begin.

The problem then becomes one of identifying communities that have the minimum preconditions to begin using surplus channel capacity. The natural usage of such capacity is of course, based upon the physical configuration of the cable system, which brings us full circle and face to face again with the community.

REFERENCES

[1]N. E. Feldman, Cable Television: Opportunities and Problems in Local Program Origination (Santa Monica, CA: Rand Corporation, 1970), p. 21.

[2]Ibid., 20.

This study is particularly concerned with locally produced programming, in contrast to "canned" material brought in from the outside. By virtue of its many channels and precise geographical coverage, cable television is uniquely qualified to provide programming characterized by its localism; by its concern with local issues, events, and people.

In the view of many: "The basic business of cable is the cultivation of local culture. This does not mean stenciling national network type programming on a local setting."[1] It does mean that the local cable system role is to:

> *. . . increase the community's awareness of their existing cultural system, thereby giving them more control over its development. . . Cable can enlarge the capacity of the local culture to communicate about and control its development.*[2]

One of the Rand Corporation papers suggests that programming should be judged by the following standard: ". . . Local origination--by means of canned distributed products is a service to the public only insofar as these products increase the diversity of programming available."[3]

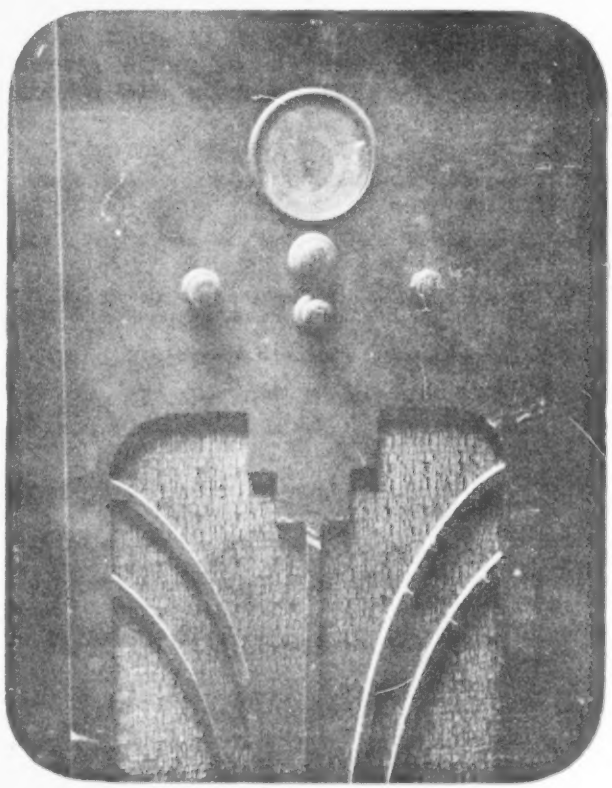
Programming Models

Broadcasting in America--first radio, then television--grew out of local stations, grew to reach the urban areas, grew to interconnect many cities, and finally became national in scope. Even educational or "public" broadcasting went the same route.

In that process somehow the hometown got lost. Stations that could broadcast school board or town council meetings--and sometimes change the local history by doing so--came to reach audiences too large to care about these local matters. They also came to be more and more expensive to build and to operate, so that local issues simply could not be afforded.

Cable has the potential to reverse these processes. It can provide a means to use the power of television to generate community involvement, dialogue, and action. It can even provide access to a medium that has long been closed to the public.

The ability of a cable system to originate programming on one or more of its surplus channels enables it to serve a minority audience--those interested in some specific local event or issue. At the same time the off-air (broadcast) channels provide service for those customers, almost certainly the majority, who want to watch mass-appeal programs. The cable system can deliberately set out to serve a minority audience without diminishing service to the majority. The free-air broadcaster with his single channel cannot serve minority and majority audiences simultaneously.



Public Service Programming

Among the things most commonly mentioned that cable can do, is provide community-based, public service programming through its local origination facilities. Such programming may cover matters of health and welfare, the interaction of local government and its constituents, social and economic needs of the community, formal and informal education, indeed, the whole range of community cultural, social, and civic events.

Much of the cablecasting that is going on now is based upon a broadcast model. Operator programmed systems, such as those in Modesto, California, and Grand Junction, Colorado, offer a mixture of programming much like a broadcast schedule, with some public interest programming in the mix.

The following list of programs however, illustrates the wide variety of programming possible, and may serve as a useful guide to those interested in beginning local production:

> Activities of service organizations (e.g., Kiwanis, Red Feather, and Rotary Clubs).
>
> Kindergarten shows arranged to entertain and educate preschool children.
>
> Women's programs: Fashion shows, modeling tips, beauty hints, etc. (Contributing Merchants are mentioned in credits.)
>
> General homemaking advice for women.
>
> Knitting and weaving instruction.
>
> Home furnishing and interior decorating for the low-budget housewife.
>
> Swap-shop programs (individuals call the station with items for sale, and viewers call the sellers directly).
>
> Calisthenics and physical culture (largely for women).
>
> Home first aid taught by an organization similar to the American Red Cross.
>
> Career guidance for women, including job and schooling opportunities.
>
> Animal care, given by a veterinarian.
>
> Gardening.
>
> University programs, focusing on special campus problems, discoveries, or research, presented by students, faculty, and administration. Includes general university information; drama and poetry readings; panel shows; discussion of issues such as academic freedom and community relations.
>
> Information on local recreational opportunities--movies, theaters, places to visit, etc.
>
> Concerts and variety shows (amateur, semiprofessional, and professional).
>
> Popular music programs.
>
> Language lessons.
>
> Public speaking.
>
> Travelogue series. (There has also been a series of programs on separate countries, presented by a commercial counselor or delegate of the country.)
>
> Tax-return advice (often in phone-in question-and-answer format).
>
> Continuing education and trade counseling for teenage dropouts and adults.
>
> Talks by police on highway driving safety, regulations, and automobile maintenance advice. (On one program, a document expert discussed how to recognize counterfeit $10 and $20 bills.)
>
> Discussions of drug use and abuse.
>
> Interviews with members of Alcoholic Anonymous, Smokers Anonymous, Weight Watchers, Gamblers Anonymous, and ex-prisoners.
>
> Automobile maintenance information.
>
> Information on the use and care of snowmobiles.
>
> Photography and cinematography instruction.
>
> Instruction in buying and caring for guns.
>
> Coverage of the industrial and business growth of the community, with an analysis of ensuring sociological changes.
>
> Programs sponsored by religious groups.
>
> Talks by members of the fire department on fire prevention and safety."[4]

The Sloan Commission Report suggests that health, education, and politics are but a few of the areas open to exploration by public service cablecasting. Their ideas on health programming have special significance for the region, for poor health practices, and services are widespread throughout Appalachia.

I. Health Services Programming

A. Health Care Assistance programming directing individuals to care for themselves. Some would be of broad general interest such as medical and nonmedical use of

drugs, and poison control--other programming might be aimed at the elderly, the chronically ill, the pregnant woman, or young mother.

B. Preventive Programming - basic practices in preventive health measures. Series could be prepared on nutrition, family planning, sanitation, and mental health.

C. Medical Practice Orientation - guide to structure of medical organization, i.e., clinics, hospitals, so that barriers of fear may be removed.

D. Community Health Information - information on government health benefits and services."[5]

Health is only one of a number of area problems that may be attacked through utilization of cable television. It was this realization that prompted the LENOWISCO Planning District Commission, Dryden, Virginia, to prepare a proposal aimed at helping solve the problem of its particular four-county area by using cable television.

To attack area problems LENOWISCO has proposed one cable channel be turned over to a programming cooperative to produce local programming with the following objectives:

> to create awareness in residents of regional and local problems, potentials, and activities.
>
> to provide information on programs and services as well as a means to take advantage of each.
>
> to obtain greater citizen involvement in the selection of program subject matter presented through the TV media.
>
> to gain broader utilization of area resources based on increased citizen knowledge.
>
> to produce locally originated programs by and for citizens of the region."[6]

In order to attack the problems of the region and satisfy the above objectives, the following list is offered as initial program categories.

1. Programs dealing with public health and health services.
2. Programs dealing with local government.
3. Programs dealing with local Police services.
4. Programs dealing with National Forest Management (Forest Rangers).
5. Programs dealing with the coal industry in cooperation with operators, Bureau of Mines, and Ecological Groups.
6. Programs dealing with local businesses, employment opportunities, and products.
7. Programs dealing with early childhood education.
8. Programs dealing with special education.
9. Programs dealing with vocational opportunities.
10. Programs dealing with educational opportunities.
11. Programs dealing with physical health education (including athletic activities).
12. Programs dealing with contemporary affairs of interest to junior high and high school students."[7]

Community Access

It has been pointed out that there are two kinds of community programs: the kind in which the program's producer describes the community, and the kind in which the community describes itself. There is need, and room, for both.

As the Sloan Commission has said,

> *. . . there are in every community issues and enthusiasts for those issues. Some of the issues, no doubt, are trivial or inconsequential. . . But the test of the issue lies in its fate upon exposure, and the health of the community, in many respects, depends upon the ability of the enthusiastic to test their issues by exposing them.*[8]

The case for community access is not based exclusively in terms of issues and grievances, although they cannot be ignored when they arise. There is also the need:

> *. . . for the expression of common notions, for the expression of artistic and cultural endeavors; a need to serve the elderly, the deaf, the very young. There is the need to express ourself in forms that can be carried across boundaries to similar communities elsewhere and indeed to dissimilar communities, which might profit from the expression of unfamiliar views--there is a pervasive need, in short to be heard.*

The most important thing about public access on cable is the opportunity it represents for everyone--even the unnewsworthy nonviolent--to be on television with his opinion, his play, his slides, his ideas.

Community access through cable television is well under way in Canada and the forms it has taken are as varied as its location.

The philosopny behind all this activity was well stated in a brief to the Canadian Radio and Television Commission (C.R.T.C.) from Challenge for Change, a program of the National Film Board, established to focus on communications and social change:

> *With the introduction of low-cost portable and easy to use ½" videotape equipment--and C.R.T.C.'s proposed community channels on cable systems ("for the enrichment of cummunity life through fostering communications amongst individuals and community groups"), CITIZENS ACCESS TO THE MEDIA became the main thrust of the Challenge for Change programme.*
>
> *By preparing their own programmes for the community channels on matters of immediate concern to themselves, we felt it would be possible for ALL citizens to participate in local issues; to dialogue with their elected officials; to tap into various information sources and generally to express themselves in whatever way they wanted--be it political debate or cultural expression, or just talking WITH each other across distances of time, and space, and misunderstanding. It could reintroduce the human scale into problem solving and indeed make local problem solving everyone's concern. The danger would be that monologue instead of dialogue: one way communication instead of feedback; and "coverage" rather than an exchange of informed opinion would turn the channel into a Tower of Babel. However, given the timidity of much local media, the "economic disinterest" of the national media and the almost complete lack of access for the ordinary guy, we felt that the Challenge for Change philosophy adapted to true citizen access to the community channels would be a positive way of encouraging people to participate rather than spectate in determining their own present and future.*[10]

Although those rural areas outside the top 100 markets enjoy no regulatory guarantees for the "one free, dedicated, non-commercial, public-access channel" that the FCC has required for America's urban citizens, there is an alternative. Lease agreements may be the answer. A leased channel, set aside for the purpose of public access, could

achieve the same goals that FCC regulation will achieve in the nation's cities.

The provision of open channels, in and of itself, will not be enough to bring public access television into general use. Without some kind of promotional agency within the community, capable of providing assistance to groups interested in using the channels, they simply will not be used.

In Canada this function has been performed by the National Film Board. In New York City, where public access channels were required by the franchise agreement, two groups have appeared to promote public access.

The Sloan Commission has outlined the function of such promotional groups,

> *. . . management of access, representation of the public in the formulation of rates and regulations, educating community groups in the manner in which they can use access to further their purposes, assuring the existence of low-cost production facilities, and furnishing seed money and training for actual production.*[11]

The nature of this promotional agency will most likely vary from community to community, but public access television has little chance of viability without such a catalytic force, whatever its structure.

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[1]Paul Ryan, "Cable Television: The Raw and the Overcooked," Radical Software, No. 1, 1970, p. 12.

[2]Ibid.

[3]N. E. Feldman, Cable Television: Opportunities and Problems in Local Program Origination (Santa Monica, CA: Rand Corporation, 1970), p. 12.

[4]Ibid., p. 3.

[5]Sloan Commission on Cable Communications, On the Cable: The Television of Abundance (New York: McGraw-Hill Publishing Co., 1971), p. 103.

[6]LENOWISCO Planning District Commission, Regional Community Cablecasting System, Unpublished proposal, Dryden, Virginia, October 1, 1971, p. 4.

[7]Ibid.

[8]Sloan Commission on Cable Communications, On the Cable: The Television of Abundance (New York: McGraw-Hill Publishing Co., 1971), p. 124.

[9]Ibid., 125.

[10]"Brief to the Canadian Radio-Television Commission," Radical Software, No. 4, Summer, 1971, p. 2.

[11]Sloan Commission on Cable Communications, On the Cable: The Television of Abundance (New York: McGraw-Hill Publishing Co., 1971), p. 128.

TECHNICAL REPORT

Questions of hardware for production are, of course, intimately linked to the software, or programming intended to be produced. The software, in turn, is affected by the limitations and capabilities of available hardware. Software is however, equally affected by such matters as available funds, the technical know-how of prospective users of the equipment, foreseeable conditions of equipment use, and the intended audience. Prerequisite to selection of hardware, then, must be a whole series of policy decisions based upon the intended application of that hardware.

Cable technology has specific attributes that predispose it for community use of the medium, and community access to the medium. It is therefore specified that required equipment must aid in meeting those ends.

Each mode of production that follows must be judged upon its ability to perform effectively and economically within the unique set of requirements that exist in producing "community programming" through cable television.

Film

A basic 16mm film equipment package (camera, audio recorder, microphones, lights, editing equipment) could be set up for approximately $15,000. Processing, printing, and mixing can be handled by any of a number of laboratories in the area.

Film has the advantage of portability; it can go anywhere a person can go. On the other hand, 16mm film has a number of disadvantages for cable utilization. Only a minority of cable systems have film playback equipment, even though it may be expected that, as program origination becomes more prevalent, more systems will add film chains. Film is, however, still hampered by its complexity, its expense, and its dependence on processing, editing, and mixing in order to get a finished product.

Some experimentation has been going on recently with super 8mm film for origination on cable television. This holds some promise, for the equipment, both for production and subsequent playback, is much less expensive and complex than is 16mm. Film, however, no matter what its size, shares the disadvantage of dependence upon extensive postshooting procedures that inevitably leads to considerable lag between the finished filmed event and the event itself.

Tape

There are now at least three standards of videotape and a fourth, and possibly fifth, standard on the way: two-inch, one-inch, half-inch, quarter-inch, and possibly three-quarter inch.

Two-inch or "high-band" tape systems are indigenous to broadcast television and are exclusively low-access systems. The equipment is very costly ($85,000 per color camera) and therefore out of reach of almost everybody, including cable systems. It is very complex and requires trained technical personnel for its operation and maintenance, therefore further limiting access to its use. Two-inch equipment is unsuited to roving remote usage because of its size and weight and therefore is limited in its abilities for extensive field utilization.

One-inch video equipment was first used as a cheaper version of two-inch as its size and price range ($3,000 to $10,000) make it ideal for institutions with closed-circuit TV systems which imitate broadcast. As with two-inch, its editing capability is perfect. Although less expensive and complex than its two-inch predecessor, one inch hardware still must be largely confined to studio and remote van use. There are no one-inch portable videotape recorders.

The major technical problem with half-inch systems has been an unstable signal which precluded clean edits and even intra-system compatibility in some cases. Many of these problems have been diminished since half-inch videotape systems were first introduced. There is now a Japanese standard of intersystem compatibility between manufacturers,

although not all the portables share it, which has a stable enough signal to be edited on relatively inexpensive (approximately $950) half-inch editing decks.

Many cable systems have used one-half inch videotape for cablecasting with good results. Even the FCC has encouraged use of one-half inch, for as they have stated,

> *. . . the use of half-inch video tape is growing and hopeful indication that low-cost videotape recording equipment can and will be made available to the public. While such equipment does not now meet our technical standards for broadcasting, the prospects for its improvement and refinement are excellent. Further, since it provides an inexpensive means of program production, we see no reason why its development should not be encouraged for use on cable channels.*[1]

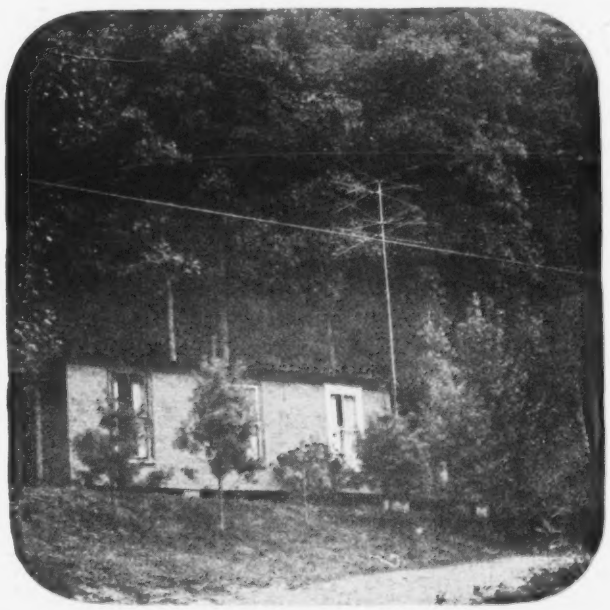
The rapidly advancing technology of portable one-half inch video is a natural and inevitable resource to tie into community programming via cable. Like film, portable video has the advantage of true portability without film disadvantages. The portable video recorder is much less complicated to use than the motion picture camera, so much so that the neophyte can start shooting right away and obtain decent results after only a few minutes worth of instructions.

Videotape, moreover--unlike film--is erasable and reusable, which renders it both more versatile and more economical. The tape can be rewound or fast-forwarded at high speeds and has capability for sound built right in.

Most important of all, videotape doesn't require development as does film; replay can be instantaneous. Videotape does not need a darkened room nor a projector, nor screen to be viewed. Instead, it is capable of becoming, like a home television set, a part of one's everyday environment.

Some brands of portable equipment include a small monitor as an integral part of the shooting ensemble. At least one widely used model permits patching of tape directly into an ordinary TV receiver. Also, tapes can be easily reproduced and transported, or converted to film for projection. Thus, from the viewer's standpoint, too, video is easy to get at, anywhere, anytime.

It is such features as these that make portable half-inch video a "people's" medium, affording the man-in-the-street the opportunity to have access to the instruments for producing information. Tied into cable he also has the opportunity for its distribution.



Distribution, Interconnection

For the purposes of this report, the systems used to transport program, film or tape, to the home receiver will be considered to be broken down into two types: interconnection and distribution. Interconnection systems link distribution systems. Distribution systems are local in scope and interconnection systems serve a larger area.

Cable Systems

As previously stated, Appalachia is dotted with hundreds of cable systems ranging in size from those serving a handful of subscribers to systems serving thousands.

These systems receive commercial and educational VHF and UHF broadcast stations and distribute them to homes and schools, generally within the confines of one community. Their raison d'etre, of course, is the mountainous terrain of Appalachia which indiscriminately interferes with home reception of all television broadcast stations. Without cable systems, television signals would simply not reach into many mountain areas.

Excess channel capacity, over and above the channels carrying broadcast signals, makes possible the local origination of programming. Since cable is fundamentally a distribution system, its pattern of distribution is primarily local. Since its technology and audience are local, the software distributed by cable systems is apt to deal primarily with community concerns.

Tape Networks

One possible way of getting programs to the home receiver is to bicycle video tapes to the cable systems having video tape recorders. This method has been used for years by ETV stations to exchange programs. Other than the vagaries of the postal service, no problems have occurred because all of the stations involved used the same video tape recorder standard. This, unfortunately, is not true in the case of the cable systems. There are over fifty slant track standards in use. So tapes cannot be exchanged unless both parties have the same type and brand of recorder. In order to distribute tapes to a large number of systems, it would be necessary to have a recorder in the dubbing center for each different type in use. These recorders range from $500 to $10,000 in cost.

Microwave

One possible way of interconnecting the cable distribution systems is by the use of microwave relay.

It is possible to construct and operate in the CARS (Community Antenna Relay Service) band 12.7 - 12.95 relays to feed programs to systems. There are now two systems in existence for multi-channel microwave for cable television local distribution service. Anywhere from 18 to 38 channels can be transmitted simultaneously from one multi-channel microwave transmitter. The signal reaches out at distances up to 20-25 miles and in any direction from the transmitter. To interconnect all Appalachian cable systems through this means would be inordinately expensive, since a single hop microwave relay would cost about $20,000. Multi-channel microwave, however, does have its rural applications.

Many rural communities are not being served by cable television as their populations are not great enough to make a CATV system profitable. In cases where there are several of these smaller communities located within a 20-mile radius of a central point, a single transmitter can serve a receiver located in each of these communities, creating a profitable basis for a CATV system.

There are also many existing CATV systems in smaller communities which have outlying settlements surrounding them. However, stringing "dry run" trunkline long distances over the countrysides to serve them has not been considered economically feasible. These isolated settlements can be reached economically and with better picture quality than would be delivered the same distance by cable, if multi-channel microwave were used.

Microwave is an interconnection system and therefore an instrument of centralization. If microwave-linked cable systems are to avoid the problems of over-centralization that broadcasters are faced with, the capability to break away from the central source must be built into the system from the beginning. The capability must be there to not

only "playback" what comes down the line from the central transmitter, but to "record," in other words to produce one's own programming.

Because broadcasters have only one channel, they cannot do both simultaneously. So they have forfeited their "local option" for the far more "professional" product to come from NBC, CBS, ABC, and indeed even PBS. Because of cable's multiple channel capability, the game is no longer an "either/or" situation; cable can carry the local election returns and the networks and independents and anything else that will fit on twelve, twenty or even forty channels.

If microwave systems are built, they must be constructed so that all connections have the capability of local origination. For an additional investment of $1,500 per site, the capability for decentralization and therefore increased access is assured.

Telephone Company

The common carriers can provide interconnection between systems. Their CATV rate is $31.50 per mile per month and extrapolation of this into an area wide system will result in a hefty operating figure. This interconnection by them uses both video cable and microwave.

Satellites

One method of interconnection which holds great promise is that of satellite relay.

In the Spring of 1973, NASA will launch an experimental satellite called ATS-F. Two channels will be allocated to educational communications in the 2500 Mhz band. With this system, it would be possible to go to selected receiving locations on the ground such as schools, cable systems, and ETV stations.

Because of the cost of the receiver-converter and the size of the receiving dish, it appears unlikely at this time and for some time to come that direct satellite to home transmission will be possible.

Proponents of the system are claiming a $500 per receiving location. This should be considered with suspicion since present ITFS systems operating on the ground utilize 2500 Mhz and the down-converter cost of these is on the order of $1,500. It should be expected that satellite transmission over longer distances will create more technical problems which may increase the cost.

Even with increased cost, it is not unrealistic to consider a satellite receiving system as being within the reach of many cable systems.

ETV

Already existing within the study area are statewide ETV networks and stations. These are interconnected by private and common carrier systems into centralized state networks and are affiliates of a national network provided through the Public Broadcast Service (PBS).

Most of the cable systems in the study area carry ETV stations as they are required to do by the FCC. Therefore, some programs of public service are reaching into the area. ETV, however, has evolved to a level of centralization one step below the strong national configuration of commercial television and one step above the community. Therefore, it too cannot truly serve the need for local television service, although it could be a powerful ally in the inception of such service via cable.

Aid in training, and utilization and possibly even use of production facilities for programming could be very helpful in beginning a joint venture between ETV stations and networks and local cable systems.

Summary

Generally, it appears that the technology is available to transport public service or educational communications in just about any mode. There does not appear to be any single transmission method which can reach every home in central Appalachia. By using a combination of all of the existing systems, broadcast and cable, plus possible satellite utilization, most of the homes can be reached.

Reaching the homes is, of course, important, in fact, prerequisite to providing any of the services discussed throughout this study. The question remains, however, "now that you can talk to Appalachia, what are you going to say?" The configuration of the technology itself molds the nature of the message to be transmitted through it. It would be poor usage of urban-based broadcast television, for instance, to address itself for an extended period of time to a local issue in a rural community.

As available communication systems are now configured, that service should be provided by cable television, for its technology is based locally. Therefore, its message is, like broadcast, molded by the channel through which it is carried. Whatever future possibilities it might have for providing a "television of abundance," cable television is able, as radiated television is not, to serve its own community and that community alone.

Flowing from this fact has come the choice of half-inch portable equipment, for it is simple to operate and inexpensive, therefore making "talking to Appalachia" a discussion most anyone can have. Flowing from the ease of equipment usage, plus cable's surplus channel capability, comes the suggestion for citizens' access to the medium. For if the technology of cable is to truly serve man's needs, a means must be provided from the beginning to not only facilitate the increased flow of information but the means for individual access and control of that information.

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CONCLUSIONS & RECOMMENDATIONS

This study did not raise for the first time the matter of using electronic media for community development in Appalachia. In 1966 a special committee of the National Association of Educational Broadcasters (NAEB) suggested formation of a regional network of educational radio and television stations to aid in the implementation of the Appalachian development program.

Although such a network was never formed, an answering paper to the NAEB proposal noted that "... educational television could be of tremendously significant value to the people of Appalachia if it were to direct a major portion of its programming to very basic needs of Appalachia's educationally needy persons."[1]

The same paper also suggested that consideration be given "... a form of television station which would originate most of its own programming (very simply produced) and concentrate as much as possible on local information..."[2]

Taken together, these observations, although originally delivered in a broadcast context, amount to an endorsement of cable television usage for provision of those local television services the region so sorely needs.

Between the promise of cable and its realization, however, lies a plethora of legal, political, economic, and technical problems of extraordinary complexity. As indicated before, cable has the potential to become an important tool for development throughout Appalachia. Opportunity, however, is not inevitability. Potential is not program.

To transform the dream into reality in Appalachia will require effort, leadership, money, and, of course, careful planning. Here then are the major conclusions of the study, which hopefully may provide the direction of future plans.

Conclusions

1) It is in the public interest to encourage the development of cable television in central Appalachia, and indeed throughout the region.

2) Local origination of public service programming by the majority of cable systems in central Appalachia is feasible, does serve the public interest, and should therefore be encouraged.

There is wide agreement in the field that local program origination via cable should be supported. Such divergent national organizations as the Rand Corporation, the Federal Communications Commission, the National Cable Television Association, the Sloan Commission on Cable Communications, the Urban Institute, and Publicable have endorsed cable originated community programming.

Representatives from the cable industry itself, namely Cypress Communications, Teleprompter, and Time-Life Broadcasting, have in recent months formulated policies for their member systems that are highly supportive of local program origination.

In the region, the Tennessee Valley Authority has expressed interest in development of public service cablecasting, as have many cable operators and all six local development districts contacted during the course of the study.

3) Local origination by means of canned distributed programming is a public service only insofar as these products diversify available programming.

4) Cable television systems should be encouraged to make at least one channel available full time for local origination by broadbased community associations.

It is doubtful whether it is sensible for the cable company to be the sole authority for control of all programming decisions. To leave this function entirely up to the operator would place him in competition with other suppliers of programming.

Thus, in order to maximize the appeal of his programming, it would be in his self-interest to restrict access and therefore limit diversity.

The community association, or council, provides the best hope for grass-roots television. Such councils would assure the relevancy of local programming to community problems and insure that the community-at-large has the privilege of using the local channel.

To insure that such local coordinating bodies will not be dominated by political or commercial interests, it is possible that some form of rotating council be devised. The form such councils will take will most probably vary from one location to another. Some may wish to incorporate, procure equipment and operate more or less independently of the cable operator; others may favor a looser voluntary association with close ties to the cable system.

5) Local programming done by citizen's councils should originate primarily in the community and involve the community as much as possible in the production process.

In practice, "local programming" by cable companies means restrained experimentation and a tendency to avoid controversial issues and personalities. It means perfunctory originations with the cable company deciding who and, therefore, who does not go on the cable. It means canned distributed programs, in a mix with modest efforts toward public service. All too often it means that the publics right to know must be tempered by the public relations value of that knowledge.

Community programming, on the other hand, means that the major part of programming must be originated in the community by community participation. The act of community production is itself a developmental process for those involved and therefore becomes input into the total developmental function. Although there is a place for production done outside the community, it lacks the element of community involvement.

Community programming also means that everyone has the right of access to the local channel. It is not a favor to be granted by the cable company.

6) Feedback should be strongly encouraged as an essential part of community programming. This two-way process could take place by a variety of means; wired locations with built-in audio and video equipment, phone-in audience reactions or open-ended audience participation shows. Eventually, two-way cable will take care of this need for feedback, but until then the other means of feedback must suffice.

7) Minority groups should be encouraged to produce their own programs for the community channel.

8) The use of one-half inch videotape for cablecasting is feasible and its supporting technology is steadily being improved.

9) Truly portable one-half inch videotape is essential if programming is to escape from the limitations of the studio.

10) It is quite possible for "beginners" to produce interesting programs for cablecasting after short duration training.

11) A production nucleus is essential to guarantee production continuity, adequate technical standards, initiation of programming, coordination of groups interested in programming, and training community people in video.

12) Some way of continuous funding must be found to support community programming.

Although production costs are very low, especially in comparison with broadcast television, they are more than many small communities could support themselves.

Even if a grant were available to purchase the studio equipment, and the cable company made no charge for transmission, the recurring costs for

operating and maintaining a community channel would still exceed the resources of most communities.

There are several alternatives for financing local "community programming":

1) Maintain the existing subscription rate and have the cable operator subsidize the local origination efforts out of the profits of running his system.

According to Robert Peters of the Stanford Research Institute, a cable system "... can expect to increase its subscribers by 10 percent, if it offers a reasonable series of automated local/live and prerecorded programs. This increase in number represents an increase in potential monthly revenue of $500 per 1,000 subscribers in the system." 3 These funds can then be put back into support of local programming.

2) Increase the subscription rate with the proviso that a percentage of the subscription be used for support of community programming.

3) Allow "institutional" advertising, or underwriting of programs. For instance, the local bank underwrites the cost for a consumer education series, therefore deferring costs from the production agency.

4) Earmark a percentage of the yearly payment from the cable operator to the franchiser for support of community programming.

5) Partially exempt the station doing local programs of certain local and state taxes.

13) The pursuit of domestic satellite utilization for cable interconnection in the region is highly encouraged. The ATS satellite, to be launched in 1973, could provide an inexpensive means for interconnecting the many CATV systems throughout the region. Regional interconnection can be used to make local issues available to all concerned, since some fraction of locally originated programming will have appeal outside the immediate community where it is produced.

14) The Appalachian Regional Commission should be playing a much more active role in the regulatory matters that will determine the future of cable TV and therefore significantly affect the Appalachian population.

For instance, the FCC's CATV rule package that was adopted in March, 1972, will not apply to those CATV systems outside the top 100 markets. In addition to discriminating against the large percentage of the population beyond the radius of the few major metropolitan centers within the Appalachian region, it also robs them of the public service benefits they sorely need. The Appalachian Regional Commission would be abdicating its responsibility to serve the best interests of the people of Appalachia, if it did not file comments with the FCC on its views of additional cable rulings that may have impact upon Appalachia.

Recommendations

It is clear that the next several years will be formative ones for the future of public usage of cable television. During this crucial time of cable's transition, a strong research, demonstration, and development effort should be mounted to provide a better understanding of its capabilities and limitations, to demonstrate its innovative uses; and to develop new applications for cable communications to serve Appalachia. Such efforts are essential if cable television is to grow in a manner commensurate with public need.

Funding for such purposes and activities might be sought from a wide variety of sources including the U.S. Government, through the Department of Health, Education, and Welfare; Department of Agriculture; Department of Housing and Urban Development; and from other agencies depending upon the nature of specific projects. For example, public and private non-profit agencies and

organizations are eligible for funding by the Department of Health, Education, and Welfare for special programs for the disadvantaged, basic and applied research and development to improve educational teaching and learning, community education programs on environmental education, drug abuse education, and similar programs. Funds for training programs or for preparing job opportunity spots might be solicited from the Department of Labor. Additionally, grants could be sought from the Ford, Sloan or Markle Foundations and other lesser foundations, industry, and educational institutions.

It would be entirely appropriate for the Appalachian Regional Commission to help support cable promotion, experimentation, and demonstration for the delivery of information and services related to health care, child development, vocational education, community development: the entire gamut of the Appalachian development program.

The findings of this study indicate the need for the formation of multi-state, multi-purpose development center to oversee research and demonstration on the public usages of cable television in Appalachia. Furthermore, it appears that such a center will want to organize in a manner which will allow it great flexibility in activities in achieving the goals and providing the services set forth below:

To serve as a regional clearinghouse for information concerning the uses, prospects, regulations, and promotion of cable;

To act as a focal point for leadership for community groups, educational institutions, local governments and other cable systems interested in local program origination, for communities in franchise negotiations, and for those localities in need of technical assistance.

To identify, organize, and fund, in cooperation with local development districts, demonstration projects in various innovative usages of cable;

To provide training in video for citizen groups interested in beginning community programming via cable;

To aid in community construction and operation of cooperative cable systems in those communities that are too small to support a private cable company;

To work with local cable operators and multiple system operators;

To advise local and state governments on the developments and uses of cable;

To provide a regional resource for production of programs aimed specifically at the Appalachian audience and for exclusive distribution via cable.

A group which will be involved in such a wide range of activities and which might benefit from financing from a wide range of sources would benefit from incorporation as a non-profit organization rather than starting as an unincorporated association. It is possible that such a research and demonstration center as here recommended could be attached as a semi-autonomous unit to an existing institution such as a university, a library, or educational television station.

The heart of any such cable television development center, no matter what its particular structure would be its locally run demonstration projects. It will be at that level that programming will be produced and put out on the cable.

If interest was confined solely to product, there are a number of ways local cable programming may be produced, i.e., roving mobile units, outside contracts, central production centers. My interests, however, are developmental and therefore demand that equal emphasis be given to the process of community production, for the process itself is a major input to overall community development.

Although a variety of organizational structures might be workable on the local level, as

indicated earlier, the formation of broad-based citizens associations or citizens communications councils may be more effective as the local entity for production. Although development districts, ETV stations, and educational institutions might well be able to handle local production themselves, none of them reflect the entire community. It is foreseeable, however, that these agencies can make significant contributions to the programming of the local channel. The more diverse the citizens council, the better, for it would be the purpose to include a wide spectrum of people into the operation of the local community channel and therefore truly reflect, as best as possible, all aspects of local culture.

"By the people and for the people," seems an appropriate phrase to describe this scenario for community television. It is through cable's mechanism for abundance that television at long last promises to be democratized. Such democratization of the medium is, however, only a promise. Cable technology, like many other technologies before it, offers only possiblities. It is ultimately up to society to choose which possibilities it wants and which it rejects. It remains to be seen if society will base its choices upon the strangely modern wisdom of Lincoln's famous phrase.

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[2]Ibid., 4.

[3]Robert W. Peters, "Local Origination--The First Step of CATV's Second Generation." (Paper presented at the 20th Annual Convention of the National Cable Television Association, Washington, D.C., 1968), p. 4.

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